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N. M. ZHAVORONKOV'S WORK IN CHEMICAL TECHNOLOGY AND CHEMICAL ENGINEERING

N. M. Zhavoronkov was elected Corresponding Member of the Academy of Sciences USSR, in the speciality of chemical technology, at a meeting of the Department of Chemical Sciences of the Academy held on 19-20 October 1953.

Zhavoronkov is an expert in the field of chemical technology. His principal investigations dealt with the processes of the production of hydrogen, the purification of gases, the production of synthetic ammonia, and the processes of the separation of mixtures of liquids by the methods of adsorption, rectification, molecular distillation, and chemical interaction. Zhavoronkov carried out a number of scientific investigations pertaining to the problem of the purification of hydrogen and of the hydrogen-nitrogen mixture [for the synthesis of ammonia] from carbon monoxide and carbon dioxide. The results of his investigations on the purification of converted gas from carbon monoxide by means of ammonical solutions of cuprous salts have been applied practically at plants and by planning organizations [which do the designing for industrial plants].

Zhavoronkov's work on the solubility of carbon dioxide in water and its absorption by water is being applied industrially and is also of theoretical value. A number of his investigations on the aerohydrodynamics of the scrubber process deal with one of the important problems involved in the design of chemical equipment used for absorption, rectification, and other separation processes. Notwithstanding the extensive application of scrubber equipment and the long experience in its use by the industry, the scrubber process in general and particularly the aerohydrodynamic aspects of the operation of scrubbers had not been investigated in great detail until recently. Zhavoronkov's work contributed considerably to an improved knowledge of this field: he was the first USSR investigator to conduct systematic and many-sided research on the aerohydrodynamics of the scrubber process. Zhavoronkov's work

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established the general relationships governing the movement of gases through dry and sprayed scrubber filllings and pertaining to the hydraulic resistance of scrubber fillings and of finely granulate materials. These investigations resulted in the development of methods for the determination of the unused capacity of industrial installations in general and of catalytic reactors (literally "contact apparatuses") in particular. They also indicated ways for improving the efficiency of the equipment in question.

In addition, Zhavoronkov carried out an extensive investigation in which the physicochemical relationships pertaining to the separation of mixtures by the method of molecular distillation were established. He also developed methods and equipment for the separation of mixtures by high-vacuum distillation and designed a new, highly efficient horizontal apparatus in which the processes of absorption, rectification, and chemical interaction can be carried out.

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